

REMARKS

Claim 135 has been added. Claims 102-124, 126-131 and 133-135 remain in the application. Reconsideration of the application in view of the amendments and the remarks to follow is requested.

The Amendment filed March 5, 2002 is objected to for adding new matter to the specification. Claims 102-110, 112-124, 126-128, 129-131, 133, and 134 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Yau et al. (6,072,227) in view of Morita (JP63-157443 A). Claim 111 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Yau et al. in view of Morita and further in view of Miyasaka (6,017,779).

Regarding the Amendment filed March 5, 2002 being objected to for adding new matter to the specification, the Examiner states the added phrase "between the plates of" is not supported by the specification. Applicant's September 3, 2002 response amended the specification to remove such phrase, and therefore, the objection to the Amendment was rendered moot previously (please see September 3, 2002 response at pg. 2 and pg. 10, 3rd para. of Remarks). Applicant requests withdrawal of such objection.

Regarding the rejection against independent claim 102 based on the combination of Yau and Morita, claim 102 recites depositing a first layer having a first dielectric constant...and...exposing the first layer to an oxygen comprising plasma effective to...**reduce** the first dielectric constant to a second dielectric constant. The Examiner correctly states that Yau does not teach such recited

limitation of claim 102, and therefore, relies on Morita to allegedly teach such limitation and states the following teachings of Morita, particularly an oxygen plasma treatment, would be obvious to modify the Yau invention (pgs. 3-4 of paper 30). However, to support reliance upon the teachings of Morita and in support of combining the teachings with Yau to allegedly teach the above recited limitation of a claim 102, the Examiner depends on two inherency arguments that cannot be sustained, and therefore, the obviousness rejection fails.

The Examiner first states Morita discloses a very similar method to Yau for forming a low-dielectric constant material and refers to the teaching of Morita to an organic silicon thin film 10 (pgs. 4-5 of the translation of Morita; Fig. 2) wherein the Examiner provides a first inherency argument alleging film 10 inherently has a dielectric constant of less than 3.5 (page 3 of paper no. 30). Next, to allegedly teach the above stated limitation of claim 102, the Examiner states that Morita teaches blanket exposing the organic silicon thin film 10 to oxygen plasma to **form** an upper surface 11 of **silicon oxide** wherein the Examiner incorrectly alleges is inherently effective to reduce the dielectric constant. Consequently, the Examiner is relying on two inherency arguments, one depending on the other, to allege a teaching of the recited limitation of claim 102. If any one inherency argument fails, the obviousness argument logically fails. Respectfully, neither inherency argument can be sustained, and therefore, both fail along with the obviousness rejection.

First, assume for argument sake that the first inherency argument is valid, that is, the organic silicon thin film 10 of Morita has a dielectric constant of less

than 3.5. Then for the second inherency argument to be valid, that is, the exposing the organic silicon thin film 10 to oxygen plasma to form **silicon oxide** inherently reduces the dielectric constant, the silicon oxide of the upper surface of the film 10 must have a dielectric constant **below** 3.5. The Examiner is respectfully reminded that "in relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics necessarily flows from the **teachings of the applied prior art.**" *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990); MPEP §2112 (8th ed.) (emphasis added). For the Examiner's second inherency argument to be valid, the Examiner must present **teachings of the applied prior art** to support the determination that the allegedly inherent characteristics necessarily flows from the teachings of the applied prior art. The Examiner points to Figs. 1-2 and pg. 2, lower two columns of Morita (pg. 3 of paper no. 30, last para.) to allegedly teach the limitation of claim 102 wherein the Examiner states such as exposing the organic silicon thin film 10 to oxygen plasma to form silicon oxide **inherently reduces** the dielectric constant. However, such teachings of Morita illustrate providing a film 10 over circuitry formed over a substrate 1 wherein film 10 is an organic solution, and then exposing substrate 1 to an oxygen plasma to transform an upper surface 11 of film 10 to **silicon oxide film** (bottom of pg. 4 through top half of pg. 5 of translation of Morita). Page 2 of translated Morita only discusses prior art problems that need to be addressed. Therefore, these

teachings of Morita are absolutely devoid of any teaching to a dielectric constant, and therefore, it is inconceivable that Morita could teach, inherently, that the oxygen plasma to film 10 inherently reduces the dielectric constant as alleged by the Examiner. In no fair or reasonable interpretation does the combination of Yau and Morita teach or suggest exposing the first layer to an oxygen comprising plasma effective to...**reduce** the first dielectric constant to a second dielectric constant as recited in claim 102. The Examiner has failed to provide the basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics necessarily flows from the **teachings of the applied prior art**, pursuant to the above authority. Accordingly, the Examiner has failed to provide a *prima facie* case of obviousness, and therefore, the obviousness rejection against claim 102 is inappropriate, fails and should be withdrawn.

In fact, in referring to the prior art teachings of Morita and Yau, as is the appropriate method of demonstrating a proper inherency argument pursuant to the above authority, only Yau has any teachings to dielectric constants of silicon oxides, and silicon oxide is what is produced by applying the oxygen plasma to film 10 of Morita. Yau teaches that the dielectric constant **of silicon oxide** "are significantly greater than 4.0" (col. 1, Ins. 61-65) with specific teachings to a silicon dioxide liner layer 2 with a dielectric constant of 4.5 (col. 2, Ins. 4-14) and a silicon dioxide cap layer 6 with a dielectric constant of 4.5 (col. 2, Ins. 23-29). The Examiner's first inherency argument alleges that film 10 inherently has

a dielectric constant of less than 3.5 (page 3 of paper no. 30). Accordingly, when the oxygen plasma transfers an upper surface 11 of film 10 to silicon oxide wherein Yau teaches silicon oxide has a dielectric constant of 4.0 or higher, then the only fair and reasonable argument is that the oxygen plasma must increase the dielectric constant of film 10 from the Examiner's alleged 3.5 to at least 4.0. Accordingly, the oxygen plasma treatment **does not reduce**, but **increases the dielectric constant** of film 10, contrary to explicit recitation of claim 102. Therefore, in no fair or reasonable argument does the combination of Morita and Yau teach or suggest a first layer having a first dielectric constant...and...exposing the first layer to an oxygen comprising plasma effective to...**reduce** the first dielectric constant to a second dielectric constant as recited in claim 102. The combination of Morita and Yau clearly fails to teach or suggest a positively recited limitation of claim 102, literally or inherently.

Accordingly, the obviousness rejection against claim 102 fails, and therefore, claim 102 is allowable.

Additionally, and again noting that appropriate inherent characteristics necessarily flow from the **teachings of the applied prior art**, the Examiner improperly relies on **Applicant's teachings** for the allegation that the oxygen plasma treatment of Morita would inherently reduce the dielectric constant. The Examiner presents a motivational rationale for the combination of Yau and Morita stated as, "[a]pplicant indicates that an oxygen plasma treatment will lower the dielectric constant" (pg. 4, middle para., of paper no. 30). First, as demonstrated

by the above stated authority, prior art must be used to support an inherency argument. Secondly, such reliance on Applicant's teachings breaks a long held and basic tenet of Patent law stated generally as the Examiner can not rely on the Applicant's disclosure for teachings to provide a rejection, and such is sometimes referred to as impermissible hindsight reconstruction. The Federal Circuit stated it most succinctly, "[t]o imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against the teacher." *W. L. Gore & Associates, Inc. v Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 312-13 (Fed. Cir. 1983). Only by improperly relying on Applicant's teachings has the Examiner attempted to teach or suggest that exposing the film 10 of Morita to an oxygen comprising plasma will inherently **reduce** the dielectric constant of film 10 as recited in claim 102. Pursuant to the authority above, the Examiner can not rely on Applicant's teachings to support a rejection. Accordingly, the Examiner's inherency argument is improper and not supported, and therefore, must fail along with the obviousness rejection against claim 102 that depends on such inherency argument. Claim 102 is allowable.

Now, addressing the inappropriateness of the first inherency argument, which is stated as, film 10 inherently has a dielectric constant of less than 3.5. The Examiner is respectfully reminded again that "in relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning

to reasonably support the determination that the allegedly inherent characteristics necessarily flows from the **teachings of the applied prior art.**" *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990); MPEP §2112 (8th ed.) (emphasis added). The Examiner has not presented any teachings that demonstrate that the allegedly inherent characteristics of film 10 of Morita having a dielectric constant less than 3.5 necessarily flows from the **teachings of the applied prior art**, and therefore, this first inherency argument must fail. The Examiner states that Morita discloses a very similar method to Yau comprising forming a low-dielectric constant material referring to film 10 of Morita, and tacitly referring to the oxidized organo silane compound of Yau (pg. 3, last para. of paper no. 30). However, as stated previously, Morita fails to teach any dielectric constants, and therefore, any reliance for a proper inherency argument must come from Yau. However, Yau only has two teachings to dielectric constants for the oxidized organo silane compound, that is, 3.0 (col. 5, lns. 40-42) and 2.5 (col. 15, lns. 15-18). Even assuming that the oxidized organo silane compound of Yau is similar enough to the film 10 of Morita to rely on such teachings of Yau for an inherency argument, Applicant submits that such cursory teachings of Yau to two dielectric constants can not possibly support the Examiner's inherency argument to "a dielectric constant less than 3.5". In no fair or reasonable interpretation does a teaching to dielectric constants of 3.0 and 2.5 teach or suggest, inherently, a dielectric constant less than 3.5. Accordingly, this first inherency argument fails, and logically, the obviousness rejection based on

this improper inherency argument must also fail. For this additional reason, and all the above reasons, the obviousness rejection against claim 102 must fail and claim 102 is allowable.

Claims 103-124 and 126-128 depend from independent claim 102, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.

For example, dependent claim 128 recites wherein the second dielectric constant is in a range of about 2.5 to 2.0. A second dielectric constant of the combination of Yau and Morita would be the silicon oxide of Morita formed after a oxygen plasma treatment. However, as demonstrated above with respect to claim 102, Yau teaches dielectric constants of a silicon oxide are significantly greater than 4.0, with examples of 4.5. Accordingly, in no fair or reasonable interpretation do teachings of such second dielectric constants of 4.5 teach or suggest the second dielectric constant is a range of about 2.5 to 2.0 as recited in claim 128. Therefore, claim 128 is allowable.

Regarding the obviousness rejection against claim 129 based on the combination of Yau and Morita, such claim recites depositing a first layer having a first dielectric constant...and... exposing the first layer to an oxygen comprising plasma effective to reduce the first dielectric constant to a second dielectric constant where the second dielectric constant is in a range of about 2.5 to 2.0. For the reasons discussed above with respect to independent claim 102, the combination of Yau and Morita fails to teach or suggest reducing the first

dielectric constant to a second dielectric constant as recited in claim 129.

Moreover, as just demonstrated with respect to dependent claim 128, the combination of Yau and Morita fails to teach or suggest the second dielectric constant is in a range of about 2.5 to 2.0 as recited in claim 129. Accordingly, in no fair or reasonable interpretation does the combination of Yau and Morita teach or suggest positively recited limitations of claim 129. Claim 129 is allowable and Applicant respectfully requests allowance in the next office action.

Claims 130-131 and 133-134 depend from independent claim 129, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.


Further, Applicant herewith submits duplicate copies of the Supplemental Information Disclosure Statements and Form PTO-1449s filed in this application on September 3, 2002 and November 7, 2002. No initialed copies of the PTO-1449s have been received back from the Examiner. To the extent that the submitted references listed on the Form PTO-1449s have not already been considered, and the Form PTO-1449s have not been initialed with copies being returned to Applicant, such examination and initialing is requested at this time, as well as return of copies of the initialed Form PTO-1449s to the undersigned.

This application is now believed to be in immediate condition for allowance, and action to that end is respectfully requested. If the Examiner's next anticipated action is to be anything other than a Notice of Allowance, the

undersigned respectfully requests a telephone interview prior to issuance of any
such subsequent action.

Respectfully submitted,

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Examiner Erik J. Kielin
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VERSION WITH MARKINGS TO SHOW CHANGES MADE
ACCOMPANYING RESPONSE TO NOVEMBER 12, 2002
FINAL OFFICE ACTION ACCOMPANYING
REQUEST FOR CONTINUED EXAMINATION (RCE)

In the Claims

The claims have been amended as follows. Underlines indicate insertions
and ~~strikeouts~~ indicate deletions.

There are no amendments to the claims.

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